

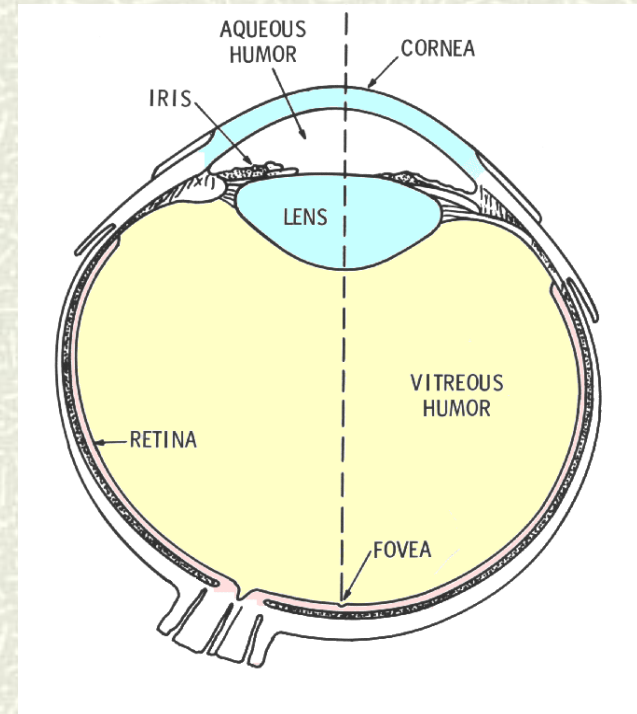
**Lawrence Livermore National Laboratory**  
**Safety Glasses Office**  
**Alan Milano, Optometrist**

**Computer Glasses**

# Eyeball Basics

## *Anatomy*

- Cornea-front of eye
  - First focusing part of eye
  - Clear skin over eye
  - Doesn't change
- Retina-back of eye
  - Want an image to focus here
- Lens-in middle of eye
  - Second focusing portion of the eye
  - Adjusts to focus an image on the retina





# How Birthdays Affect The Lens

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## # Focusing power fades

Muscles don't pull like they used to

Lens is less flexible

## # Close objects become blurred

Reading distance first to blur

Computer distance soon follows

# Computer Glasses

*What are they?*

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## *Task Specific Spectacles*

- # Driving glasses for – Driving
- # Reading glasses for – Reading
- # Computer glasses for – Computers



# Computer Glasses

## *The lenses*

### # Magnifying glass

Rigid glass

Must be held at specific distance

### # Aging human lens = magnifying lens

Becomes rigid

Must have objects at specific distance

-arms too short

-tromboning

Administrative Information Only

# Computer Glasses

## *The measurements*

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- # Eye to monitor
- # Eye to objects further
  - Calendar on wall
- # Eye to objects closer
  - Papers held in hand



# Computer Glasses

## *The measurements*

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If workstation changes,  
measure the proposed  
**NEW**  
distances.

# Computer Glasses

## *The measurements*

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Safety Glasses Authorization form #LL2588

(refer to attached authorization form)

Record appropriate distances

Print name and sign in the computer glasses  
section



Form

LL 2588

AUTHORIZATION FOR SAFETY GLASSES  
(Health & Safety Manual Section 10.07)

Complete this form and call extension 2-5190 for an appointment

Date  
Mar 31, 2004

Name (Last, First, MI)	Emp#	Age	L-Code	Bldg	Extension	Pager
Job Title		Department/Division/Program				
Employment Status (check one)	<input type="checkbox"/> Permanent <input type="checkbox"/> Summer	<input type="checkbox"/> Consultant <input type="checkbox"/> Contract	Supervisor Name (Type or Print)			Extension
Resource Manager (type or print)		Extension				

Job Exposure (Check all that apply)						
<input type="checkbox"/> Impact	<input type="checkbox"/> Bright Light	<input type="checkbox"/> Infrared	<input type="checkbox"/> Glassblowing			
<input type="checkbox"/> Chemical	<input type="checkbox"/> Ultraviolet	<input type="checkbox"/> Welding/Soldering	<input type="checkbox"/> Other			
Hours exposed per week	Do you wear contact lenses?	<input type="checkbox"/> No <input type="checkbox"/> Yes	Contact Lens Type	<input type="checkbox"/> Hard <input type="checkbox"/> Soft	Have you been previously issued LLNL glasses?	<input type="checkbox"/> No <input type="checkbox"/> Yes
Date of most recent eye exam						

Glasses **WILL NOT** be ordered if the prescription has expired.

Reason for replacement or repair		
<input type="checkbox"/> Scratched lenses	<input type="checkbox"/> Broken frame	<input type="checkbox"/> Lost
<input type="checkbox"/> New prescription	<input type="checkbox"/> Broken lenses	<input type="checkbox"/> Other
Does this employee work on exposed, energized electrical equipment >50V? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Distance to monitor: _____ Distance to reference material: _____ Distance to other: _____		
Supervisor Approval (print or type)	Cost Account Approval (print or type)	Computer Glasses/Evaluator Approval (print or type)
	Cost Account #	
Supervisor Approval (signature)	Cost Account Approval (signature)	Computer Glasses/Evaluator (signature)

**Request for Prescription Eyewear require the following signatures**

OTHER GLASSES

Check type of lenses required:	<input type="checkbox"/> Welding Calobar	<input type="checkbox"/> Didymium	<input type="checkbox"/> Sun
	<input type="checkbox"/> Laser	<input type="checkbox"/> Respirator	<input checked="" type="checkbox"/> Computer

SAFETY GLASSES OFFICE USE ONLY

Date Safety Glasses Ordered	Ordered By	Eye Size
		<input type="checkbox"/> 44 <input type="checkbox"/> 45 <input type="checkbox"/> 46 <input type="checkbox"/> 47 <input type="checkbox"/> 48 <input type="checkbox"/> 49 <input type="checkbox"/> 50 <input type="checkbox"/> 51 <input type="checkbox"/> 52
		<input type="checkbox"/> 53 <input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56 <input type="checkbox"/> 57 <input type="checkbox"/> 58 <input type="checkbox"/> 59 <input type="checkbox"/> 60 <input type="checkbox"/> 61
Bridge Size		Lens Color
<input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25 <input type="checkbox"/> 26		<input type="checkbox"/> Clear <input type="checkbox"/> Cal <input type="checkbox"/> Pink <input type="checkbox"/> Gray
Cat Number	Temple Sizes	
	<input type="checkbox"/> 125 <input type="checkbox"/> 130 <input type="checkbox"/> 135 <input type="checkbox"/> 140 <input type="checkbox"/> 145 <input type="checkbox"/> 150 <input type="checkbox"/> Other	

# Computer Glasses

*Who needs them?*  
*Forward lean & tilt*



Administrative Information Only



# Computer Glasses

*Who needs them?*

*Backwards lean & tilt*





# Computer Glasses

*Who needs them?*  
*Ahhhhhhhh Just Right*



Administrative Information Only



# Computer Glasses

## *Who needs them?*

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### # Bifocal wearers

- Head tilt and lean

### # Mid 40's and above

- Loss of focusing power

### # Multiple viewing distances

- Decreased flexibility

### # Symptomatic individuals of any age

# Computer Glasses

## *Who needs them?*

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### Symptoms you may hear from employee

- ~Headaches
- ~Fatigue
- ~Redness
- ~Eyestrain
- ~Tearing
- ~Irritation

- 
- ~Neck and shoulder pain
  - ~Wrist, finger, or hand pain
  - ~Back pain



# The eyes lead the body

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- # Your body moves into whatever position is necessary in order to see the objects it needs to view.
- # They may not realize what they are doing to put it in focus
- # You **MUST** observe

# Computer Glasses

## *Who needs them?*

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### # Observed behaviors

- Tilting head up
- Leaning in towards monitor
- Holding papers at arms length
- Moving paper in and out to get clear (tromboning)
- Squinting

### # Ask questions

- Do you look at things.....?
- Do you hold things.....?



# Computer Glasses

## *Not just for the computer*

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### # What else do we look at?

Document holder

Papers on desk

Papers we pick up to read

Books on credenza to side or behind us

Another computer monitor

Tabs on files

Some just stare at the ceiling

# Computer Glasses

## *The options*

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### Single vision

- # Younger person with some available focusing power
- # Programmer who doesn't refer to documents



# Computer Glasses

## *The options*

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### Bifocals, line or no-line

- # Holds documents in hands
- # Non touch typist
- # Documents at front of desk with monitor at back
- # These are **not** for walking around or high speed driving

# Computer Glasses

## *The options*

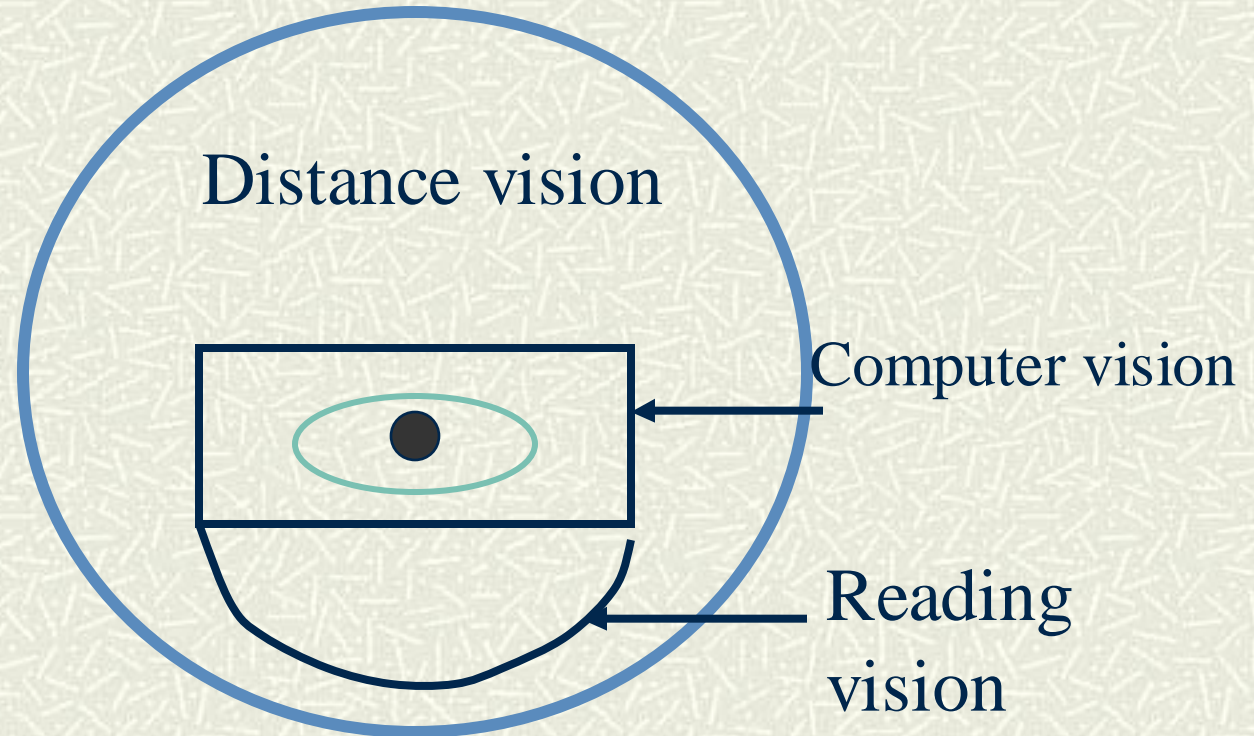
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### Trifocal Lens

- # Distance at top of lens, center is set for monitor, and bottom for reading
- # Monitor, keyboard, and people coming in the door
- # Need a larger frame



# Trifocal lens



# Computer Glasses

## *The options*

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### Modified monovision

- # Single vision, not a multifocal
- # Each lens is set to a slightly different viewing distance



# Computer Glasses

## *New work area*

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If new ergo evaluation with change in work area, and employee is currently a computer glasses user, may need a new prescription.

Take new measurements and compare to previous evaluation.

New work area can have added visual demands.

# Lighting

## *Glare-direct*

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### # Directly into eye

- Window directly behind monitor
- Task light shining into eye
- Under cabinet lights
- Overhead lights in field of view



# Lighting

## *Glare-direct*



# Lighting

## *Glare-direct*



Administrative Information Only



# Lighting

## *Glare-direct*



Administrative Information Only

# Lighting

## *Glare-direct*

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### # Fixes

- Pull shade down or rotate slats
- Move task light or get a better light
- Tape a barrier around the bottom of cabinets
- Baseball cap-visor test
- Install baffles on overhead lights



# Lighting

## *Glare-direct*



# Lighting

## *Glare-indirect*

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### # Reflected light

- Reflections off monitor from windows behind or from lights above.
- Task light in front aimed towards you, reflecting off the work surface.
- Overhead lights reflecting off light colored work surface. (desk top or papers)



# Lighting

## *Glare-indirect*

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### # Fixes

- Pull down shade or rotate slats
- Turn off one set of overhead lights
- Install baffles on overhead lights
- Move task light to side so that it is pointed across your eyes, not towards them
- Glare screen for monitor
- Tape a cover over monitor-visor test for monitor

# What else can the Safety Glasses Office do for me?

- # Low vision aids
  - Stand magnifiers
  - Hand held magnifiers

- # Telescopes





# Consultation

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Optometrists are available for consultation

1. Phone consult
2. On location visit to employee work area

**\*\*Not a bother, we actually LIKE  
challenging situations and being able to get  
out of our office.\*\***

# Safety Glasses Office

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## General contact information

- Phone 2-5190
- Fax 2-7529
- Email [safetyglasses@llnl.gov](mailto:safetyglasses@llnl.gov)

## Optometrists

- Alan Milano
  - [Milano1@llnl.gov](mailto:Milano1@llnl.gov)
- Tim Dalby
  - [Dalby1@llnl.gov](mailto:Dalby1@llnl.gov)